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Wood Boring Insects in Alaska

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Wood wasp ovipositing (laying eggs) in
white spruce.

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WOOD BORING INSECTS IN ALASKA

by Karen E. Post

Wood boring insects are commonly associated with diseased, stressed, or dying spruce trees in Alaska. Commonly encountered wood borers are members of two insect orders; the Coleoptera, or the beetles, and the Hymenoptera, or the wasps. The wood boring beetles are members of two families; the long-horned beetles (also called roundheaded wood borers) (*Cerambycidae*) and the metallic wood borers (flatheaded wood borers) (*Buprestidae*). Adult long-horned beetles are characterized by antennae which are at least as long as their body (Figure 1). Their larvae have a rounded head, and they make galleries in the sapwood that are rounded when viewed in cross section. Metallic wood borers are wedge-shaped beetles and are often shiny in appearance (Figure 2). Their larvae have a flattened head, and they make oval-shaped galleries in the sapwood when viewed in cross section. Wood wasps are large, menacing looking yellow and black wasps about 2.5 cm long (cover photo). Their larvae are stout, legless grubs, about 1.5 cm long, with a darkened horny protuberance on the rear end (Figure 3). All three wood borers have similar life histories.



Figure 1. Adult long-horned beetle,
Monochamus scutellatus.



Figure 2. Adult metallic wood borer,
Buprestis sp.

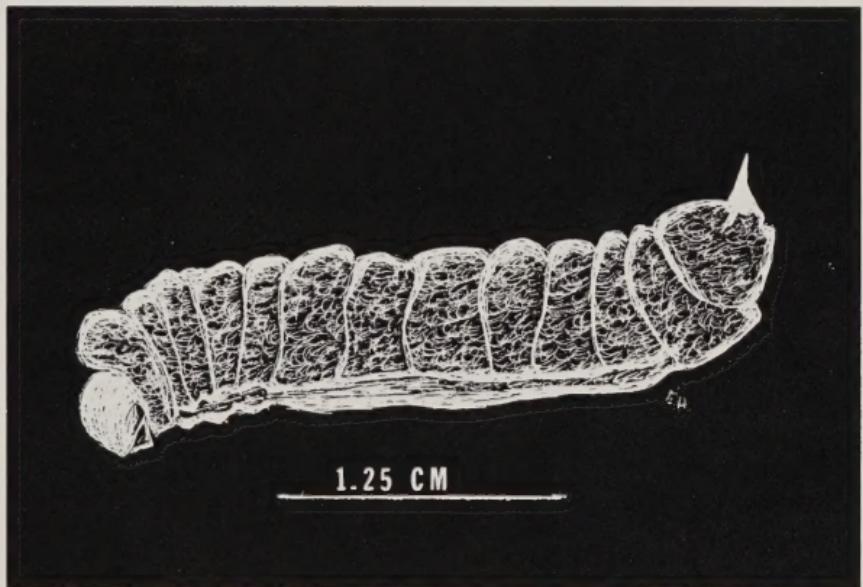


Figure 3. Wood wasp larva.

Generally, wood borer larvae are elongate and whitish; they have a legged or legless body, depending on the species, and dark brown mandibles (Figure 4). Full-grown wood borer larvae measure about 5 cm in length.

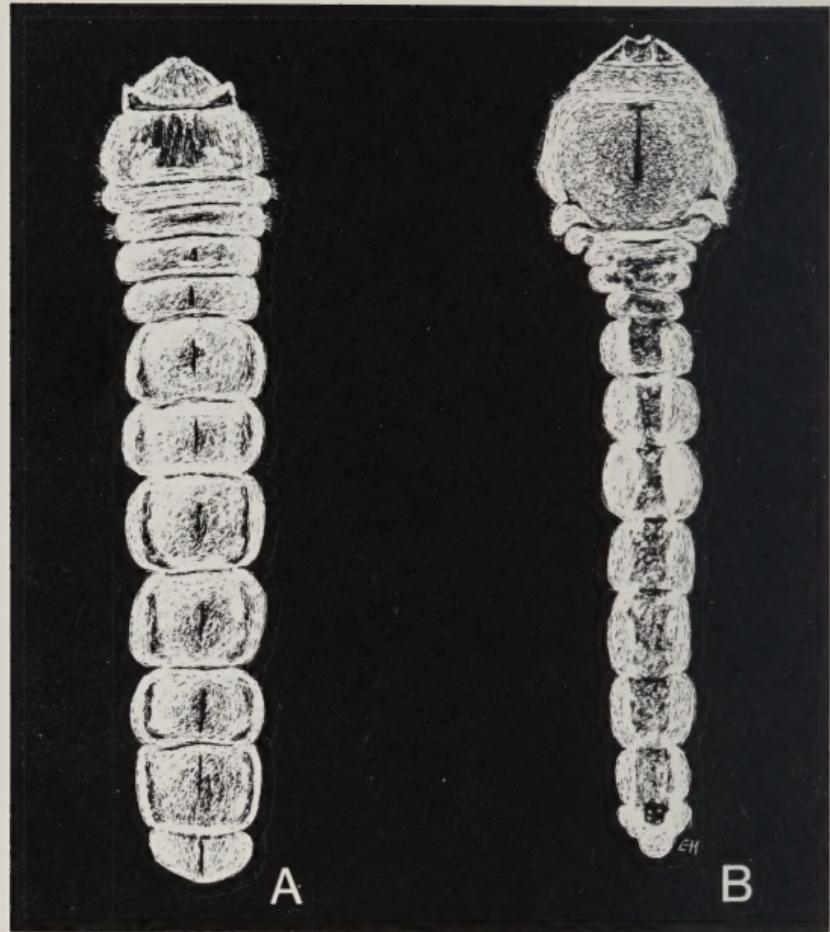
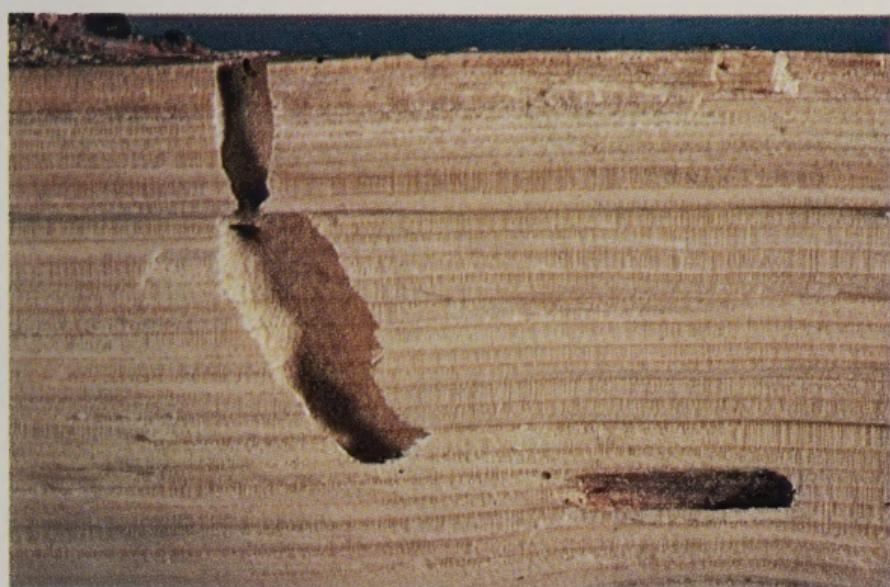


Figure 4. Wood borer larvae: A. Roundheaded borer (*Cerambycidae*); B. Flatheaded borer (*Buprestidae*).

Wood borers are commonly mistaken for bark beetles, particularly the spruce beetle (*Dendroctonus rufipennis*) and the engraver beetle (*Ips* sp.). However, wood borer adults and larvae are three to five times the size of bark beetles. In addition, bark beetles feed under the bark and do not penetrate the wood, as do wood borers.

LIFE HISTORY: Adult wood borers fly in late spring through midsummer, mate, and find a suitable host tree in which the female lays an egg (oviposits) in the tree bark. Eggs hatch into larvae that feed throughout the summer on phloem. In late summer, cerambycid, wood wasps, and some buprestid larvae bore into the sapwood where they overwinter, pupate and emerge in spring as adults, completing the life cycle (Figure 5). Some buprestid larvae spend their entire immature life in the phloem region.

The length of life cycle depends on the species and densities of wood borers and environmental factors such as temperature and moisture content of the sapwood. Some species in other parts of the country are said to have life cycles as long as seven years.



*Figure 5. Roundheaded wood borer gallery, **Monochamus** sp.*

Some wood borers overwinter as larvae in the phloem of standing trees either below or above the snow line, depending on species. Others, such as the buprestid *Chrysobothris trinervia*, presumably overwinter as adults. Pupation usually occurs during a short period in the spring for those borers with one-year cycles.

Forest fires have a significant effect on wood borer activity. Some species are attracted to fire, using infrared sensors located on their bodies. *Melanophila* sp. oviposit in large roots exposed by fire and around the base of burned trees, not higher than a meter above ground. High densities of a cerambycid, *Monochamus scutellatus*, were found ovipositing in burned trees from the bases to about 10 m above ground.

Wood boring insects may be considered beneficial in the forest, where they aid in the breakdown and decomposition of dead woody material.

Their larval galleries in the wood create entry-ways for pathogens to become established, which further break down the cellulose and fibers within the trees and replenish the soil with nutrients for new plant growth. Wood borers are detrimental when they cause economic losses in the form of wood degradation and volume loss.

DETECTION AND DAMAGE: Wood borers can be detected in trees in a number of ways, depending on the developmental stage of the beetle. In their early stages when the larvae are feeding in the phloem, a loud, squeaky noise may be heard. There may be small amounts of dark, sliver-shaped sawdust being pushed from small holes in the bark. Larvae may be found by peeling the bark from this area. As the larvae enter the sapwood, sawdust being pushed from the hole in the bark may change to a sliver-shaped, mixed yellow and dark colored sawdust. Chewing sounds can be heard quite distinctly at this time. Bark peeled from the log may expose the irregularly shaped feeding gallery in the phloem and a hole leading into the sapwood. The tunneling galleries in the sapwood may be as large as one inch in diameter and penetrate to the center of the tree, depending on the wood borer species.

Wood boring beetles usually are not a primary agent of tree mortality, but may cause a structural weakness or susceptibility to pathogens such as decay fungi. Lumber products manufactured from infested wood borer material may be structurally weaker than uninfested wood due to the nature of the winding larval galleries in the sapwood.

CONTROL MEASURES: Lindane® is the only insecticide currently approved by the Environmental Protection Agency for control of wood borers. It may be applied to the stems of trees to prevent wood borer infestation, but it will not kill wood borers once they have gained entry into the phloem.

Mechanical control may be applied by peeling the bark off recently felled logs that are to be used for lumber products or houselogs. This will prevent oviposition and remove young larvae under the bark; however, it will not kill larvae once they have entered the sapwood. Peeling of the logs should be done immediately after cutting the tree if the tree is felled in early spring through midsummer, which is the flight period of the adult beetle. Trees felled in late summer should be peeled before the next spring flight period.

Firewood gatherers often express concern about bringing infested firewood to their homes, fearing that the insects will infest building structures and urban or ornamental trees. The chewing noises of wood borers can be quite loud and sound potentially destructive. To oviposit, wood boring beetles need wood that has bark on it; therefore, they cannot infest structures or peeled logs. Once established in suitable habitat, the larvae will not move to other locations. If homeowners have spruce trees on their property that are stressed, weak, diseased, or dying, there may be a potential for borers that emerge in the spring from infested woodpiles to attack the weakened trees. This problem can be alleviated by burning the firewood before the beetles fly in the spring, by keeping yard trees healthy and vigorous through fertilization and watering, and by avoiding physical injury or damage to the tree.

CAUTION: Pesticides can be injurious to humans, domestic animals, desirable plants and fish, or other wildlife, if they are not handled or applied properly. Use all pesticides selectively and carefully. Follow recommended practices for the disposal of surplus pesticides and pesticide containers. Mention of a pesticide in this publication does not constitute a recommendation for use by the USDA, nor does it imply registration of a product under Federal Insecticide, Fungicide, and Rodenticide Act, as amended. Mention of a proprietary product does not constitute an endorsement by the USDA.



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Additional information on this insect can be obtained from your local USDA Cooperative Extension Service, Alaska State Forestry Office, or from:

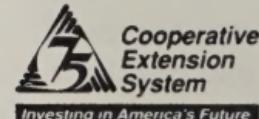
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Alaska Pest Scout Program
Contact your local Cooperative
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Wood Boring Insects, by Karen E. Post, Pest Scout, Cooperative Extension Service, University of Alaska, March 1984.



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